

**SOUTHWEST FISHERIES SCIENCE CENTER**  
**FOURTH QUARTER REPORT-FY 2002**  
For the Period July 1 - September 30, 2002

**Submitted by:** John Hunter, Division Director, Fisheries Resources Division

**Title of Accomplishment or Milestone:** Biomass estimates of Pacific sardine in spawning habitats off the west coast of North America.

**Current Status:** Delayed.

**Background Information:** The Fisheries Resources Division of the SWFSC provides estimates of biomass of Pacific sardine for use in setting the harvest guideline each year. The stock synthesis model uses the catch at age analysis, a proxy for recruitment, spawning area, a spawn production time series and lastly, an arcane migration model based on the sardine population as perceived in 1990. The population of Pacific sardine has increased in biomass and geographic extent ranging into the Gulf of Alaska coastal waters. Fisheries now exist along the coast of North America from Baja California, Mexico to British Columbia, Canada. To deal with the impact of this biomass explosion and geographic shift, the Trinational Sardine Forum was begun in 2000. Regional biomass estimates were one of the topics for improving coast-wide stock assessment and monitoring through forum collaboration. Migration models using historical age-length frequency data and tagging data have been explored in the context of the stock assessment model for Pacific sardines off California. There have been low level surveys which provide some data on biomass, but the methods are uneven, uncalibrated, and not contemporary. The annual recommendations of harvest guideline are still the same as when the management regime was established.

**Purpose of Activity:** To continue rebuilding coastal pelagic stocks, like the Pacific sardine by assembling information and proposing improvements for regional biomass estimates.

**Description of Accomplishment and Significant Results:** Dr. Nancy Lo has been the chairman of the biomass subcommittee of the Trinational Sardine Forum since November 2000. She has corresponded and met with members of her committee who have biomass estimation procedures in place for the contemporary population of Pacific sardine. Since the biomass for the total North American west coast is determined formally, this estimate includes only the proportions estimated for the various habitats along the West Coast. The current perception is that 80% occupies the offshore area of Central and Southern California and that 5% each is located in the Pacific Northwest regions of 1) Northern California, Oregon and Washington and 2) British Columbia. The remaining 10% occupies the inshore and offshore waters of Baja California. These provisional estimates must still be improved by cooperative and standardized efforts.

**Significance of Accomplishment:** This early work, on a dynamically increasing population allows efforts to be mounted to document the current status of the sardine stock (s) and establish boundaries for formal estimating procedures. This work has been completed in time for the Stock Assessment Review (STAR) panel for Pacific sardine and chub mackerel scheduled for the next fiscal year.

**Problems:** The costs of standardizing the fishery independent evaluation of the stock (s) by region and the personnel time for an international effort (Mexico-US-Canada) to evaluate the fishery dependent methods are not available.

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